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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,427	06/25/2003	Wen-Chien D. Hsiao	SJO920000097US1	6316
28875	7590	11/09/2005	EXAMINER	
Zilka-Kotab, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			RENNER, CRAIG A	
			ART UNIT	PAPER NUMBER
			2652	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,427

Applicant(s)

HSIAO ET AL.

Examiner

Craig A. Renner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 9-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>29 August 2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 9-13 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to one or more non-elected inventions/species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10 March 2005.
2. Applicant's election without traverse of "Species I (claims 1-8)" in the reply filed on 29 August 2005 is acknowledged. Accordingly, claims 14-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to one or more non-elected inventions/species, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - a. In lines 10-11 of claim 1, "the third pole" is indefinite because it lacks clear and/or proper antecedent basis.

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b. In line 2 of claim 2, it is indefinite as to whether the "electrically conductive coil" is the same as the "inductive coil" set forth in line 8 of independent claim 1, or if this "electrically conductive coil" is in addition to the "inductive coil" set forth in line 8 of independent claim 1.

c. Claims 3 and 4 inherit the indefiniteness associated with their respective base claims and stand rejected as well.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (US 6,239,948).

Wu teaches a magnetic write head comprising a first magnetic layer (12 and/or 16) having a first width; a second magnetic layer (20) having a second width; a non magnetic layer (18) separating at least a portion of the first magnetic layer from the second magnetic layer (as shown in FIG. 3, for instance); a third magnetic layer (26) contacting the second magnetic layer, the third magnetic layer having a third width greater than the second width of the second magnetic layer (as shown in FIG. 3, for instance); and an inductive coil (28) disposed between the first and third magnetic

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layers along a coil-registry location (immediately above 28) remote from an air bearing surface of the third magnetic layer (as shown in FIG. 5, for instance), wherein the third magnetic layer is nonuniformly thick (as shown in FIG. 5, for instance) such that a thickness of the third pole at the air bearing surface thereof is less than a thickness of the third magnetic layer at all points along a length of the coil-registry location (as shown in FIG. 5, for instance) [as per claim 1]; wherein the magnetic head further comprises an electrically conductive coil (28), a portion of which passes between the first magnetic layer and the third magnetic layer (as shown in FIG. 5, for instance), the electrically conductive coil having a substantially planar first surface that is coplanar with a plane defined by an interface between the second magnetic layer and the third magnetic layer (as shown in FIG. 5, for instance) [as per claim 2]; wherein the magnetic head further comprises non-magnetic, electrically insulative material (includes 30, for instance) separating the electrically conductive coil from the first, second, and third magnetic layers (as shown in FIG. 5, for instance) [as per claim 3]; and wherein the first and second layers are magnetically connected with one another in a back gap region (as shown in FIG. 5, for instance) [as per claim 4].

7. Claims 1, 3-5 and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (US 5,652,687).

With respect to claims 1 and 3-4, Chen teaches a magnetic write head (FIGS. 20 and 22, for instance) comprising a first magnetic layer (102) having a first width; a second magnetic layer (P2T) having a second width; a non magnetic layer (G)

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separating at least a portion of the first magnetic layer from the second magnetic layer; a third magnetic layer (104) contacting the second magnetic layer (as shown in FIGS. 20 and 22, for instance), the third magnetic layer having a third width greater than the second width of the second magnetic layer (as shown in FIG. 20, for instance); and an inductive coil (110) disposed between the first and third magnetic layers along a coil-registry location (immediately above 110) remote from an air bearing surface of the third magnetic layer (as shown in FIG. 22, for instance), wherein the third magnetic layer is nonuniformly thick (as shown in FIG. 22, for instance) such that a thickness of the third pole at the air bearing surface thereof is less than a thickness of the third magnetic layer at all points along a length of the coil-registry location (as shown in FIG. 22, for instance) [as per claim 1]; wherein the magnetic head further comprises non-magnetic, electrically insulative material (includes I_1 and I_2 , for instance) separating the electrically conductive coil from the first, second, and third magnetic layers (as shown in FIG. 22, for instance) [as per claim 3]; and wherein the first and second layers are magnetically connected with one another in a back gap (BG) region (as shown in FIG. 22, for instance) [as per claim 4].

With respect to claims 5 and 7-8, Chen teaches a magnetic head (FIGS. 20 and 22, for instance) comprising a magnetic write structure (200) having an ABS end (ABS) thereof, the magnetic write structure comprising a first magnetic layer (102) having a first pole (P1) at the ABS end thereof; a second magnetic layer having a second pole (P2T) at the ABS end thereof, the second pole being spaced apart from the first pole (as shown in FIG. 22, for instance) and having a second-pole width (as shown in FIG. 20,

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for instance); a third magnetic layer (104) having a third pole (P2) at the ABS end thereof, the third pole contacting the second pole (as shown in FIG. 22, for instance) and having a third-pole width greater than the second-pole width (as shown in FIG. 20, for instance) so that the second magnetic layer and the third magnetic layer taken together have a T-shape when viewed from the ABS end (as shown in FIG. 20, for instance); and an inductive coil (110) disposed adjacent to and in registry with the third magnetic layer at a coil-registry location (immediately above 110) remote from the third pole (as shown in FIG. 22, for instance), a plane of the third magnetic layer defined between the third pole and a buried portion of the third magnetic layer (i.e., the plane is an inclined plane defined between the third pole and the buried portion of the third magnetic layer) passing through the inductive coil (i.e., at a slant when viewed in FIG. 22, for instance), wherein the third magnetic layer is nonuniformly thick (as shown in FIG. 22, for instance) such that a thickness of the third pole is less than a thickness of the third magnetic layer along all points of the coil-registry location (as shown in FIG. 22, for instance) [as per claim 5]; wherein the magnetic head further includes a gap insulator (G) disposed between the first pole and the second pole (as shown in FIG. 22, for instance) [as per claim 7]; and wherein the magnetic head further includes electrical insulation (includes I_1 and I_2 , for instance) lying between the inductive coil and the adjacent first magnetic layer and third magnetic layer (as shown in FIG. 22, for instance) [as per claim 8].

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art FIGS. 2-3 and detailed description thereof in view of Matono et al. (US 2002/0030930).

With respect to claims 1-4, Applicant's admitted prior art FIGS. 2-3 and detailed description thereof teaches a magnetic write head (50) comprising a first magnetic layer (52) having a first width; a second magnetic layer (60) having a second width (W_{P2}); a non magnetic layer (58) separating at least a portion of the first magnetic layer from the second magnetic layer (as shown in FIGS. 2-3, for instance); a third magnetic layer (70) contacting the second magnetic layer (as shown in FIGS. 2-3, for instance), the third magnetic layer having a third width (W_{P3}) greater than the second width of the second magnetic layer (as shown in FIG. 3, for instance); and an inductive coil (74) disposed between the first and third magnetic layers along a coil-registry location (76) remote from an air bearing surface (56) of the third magnetic layer [as per claim 1]; wherein the magnetic head further comprises an electrically conductive coil (74), a portion of which passes between the first magnetic layer and the third magnetic layer (as shown in FIG. 2, for instance), the electrically conductive coil having a substantially planar first surface

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that is coplanar with a plane defined by an interface between the second magnetic layer and the third magnetic layer (as shown in FIG. 2, for instance) [as per claim 2]; wherein the magnetic head further comprises non-magnetic, electrically insulative material (includes 68 and 78, for instance) separating the electrically conductive coil from the first, second, and third magnetic layers (as shown in FIG. 2, for instance) [as per claim 3]; and wherein the first and second layers are magnetically connected with one another in a back gap (66) region (as shown in FIG. 2, for instance) [as per claim 4].

With respect to claims 5-8, Applicant's admitted prior art FIGS. 2-3 and detailed description thereof teaches a magnetic head (50) comprising a magnetic write structure having an ABS end (56) thereof, the magnetic write structure comprising a first magnetic layer (52) having a first pole (54) at the ABS end thereof; a second magnetic layer (60) having a second pole (64) at the ABS end thereof, the second pole being spaced apart from the first pole (as shown in FIGS. 2-3, for instance) and having a second-pole width (W_{P2}); a third magnetic layer (70) having a third pole (72) at the ABS end thereof, the third pole contacting the second pole (as shown in FIGS. 2-3, for instance) and having a third-pole width (W_{P3}) greater than the second-pole width (as shown in FIG. 3, for instance) so that the second magnetic layer and the third magnetic layer taken together have a T-shape when viewed from the ABS end (as shown in FIG. 3, for instance); and an inductive coil (74) disposed adjacent to and in registry with the third magnetic layer at a coil-registry location (76) remote from the third pole, a plane of the third magnetic layer defined between the third pole and a buried portion of the third magnetic layer passing through the inductive coil (as shown in FIG. 2, for instance) [as

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per claim 5]; wherein the inductive coil is substantially planar and lies in an inductive-coil plane (80); the first magnetic layer is substantially planar and lies in a first-magnetic layer plane (82) parallel to and below the inductive-coil plane (as shown in FIG. 2, for instance), the second magnetic layer is substantially planar and lies in a second magnetic layer plane (84) parallel to and below the inductive coil plane (as shown in FIG. 2, for instance), the third magnetic layer is nonplanar (as shown in FIG. 2, for instance), with the third pole and a back gap layer portion (86) remote from the third pole both lying in a buried-portion plane (88) substantially coincident with the inductive-coil (as shown in FIG. 2, for instance), and a coil-registry portion (90) lying in a coil-registry portion plane (82) parallel to and above the inductive-coil plane (as shown in FIG. 2, for instance), and wherein the coil-registry location is within the coil registry portion of the third magnetic layer (as shown in FIG. 2, for instance) [as per claim 6]; wherein the magnetic head further includes a gap insulator (58) disposed between the first pole and the second pole (as shown in FIGS. 2-3, for instance) [as per claim 7]; and wherein the magnetic head further includes electrical insulation (includes 68 and 78, for instance) lying between the inductive coil and the adjacent first magnetic layer and third magnetic layer (as shown in FIG. 2, for instance) [as per claim 8].

Applicant's admitted prior art FIGS. 2-3 and detailed description thereof, however, remains silent as to "wherein the third magnetic layer is nonuniformly thick such that a thickness of the third pole [at the air bearing surface thereof] is less than a thickness of the third magnetic layer along all points of the coil-registry location."

Matono teaches a magnetic layer (13) being nonuniformly thick such that a thickness of a pole (13Ae) thereof at an air bearing surface (30) thereof is less than a thickness of the magnetic layer along all points of a coil-registry location (directly above 11 within 13B) in the same field of endeavor for the purpose of "preventing magnetic flux being saturated in the middle of the magnetic path and preventing data from being written and erased in regions where data is not suppose to be written, even at smaller track widths" (paragraph [0090], for instance). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the third magnetic layer of applicant's admitted prior art be nonuniformly thick such that a thickness of the third pole at the air bearing surface thereof is less than a thickness of the third magnetic layer along all points of the coil-registry location as taught/suggested by Matono. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the third magnetic layer of applicant's admitted prior art be nonuniformly thick such that a thickness of the third pole at the air bearing surface thereof is less than a thickness of the third magnetic layer along all points of the coil-registry location as taught/suggested by Matono since such prevents magnetic flux from being saturated in the middle of the magnetic path and prevents data from being written and erased in regions where data is not suppose to be written, even at smaller track widths.

10. Applicant's arguments filed 10 March 2005 have been fully considered but they are not persuasive.

The applicant argues that Chen does not teach “that the thickness of the third pole be less than a thickness of the third magnetic layer along all points of the coil-registry location.” This argument, however, is not found to be persuasive because Chen does teach that the thickness of a third pole (P2) is less than a thickness of a third magnetic layer (104) along all points of a coil-registry location (directly above 110, as shown in FIG. 22, for instance). Note that the right-most portion of the coil-registry location has a thickness equal to the thickness of pole P2 plus the thickness along an interface with layer 206 (emphasis added).

The applicant further contends “Matono only has two pole tips, and so is a completely different type of head, weighing against combination with AAPA FIGS. 2-3.” This argument, however, is not found to be persuasive because, although the head of Matono only has two pole tips, it is not a “completely different type of head”. The head of Matono is also a magnetic write head that includes a read gap, an inductive coil, and magnetic layers connected at a back gap. Matono has only been used to show motivation for reducing the thickness of a pole of an upper magnetic layer of a magnetic write head.

The applicant also asserts “Matono claims that his head is fully functional as is, and so there is no motivation to combine it with AAPA.” This argument, however, is not found to be persuasive because the rejection, *supra*, does not “combine” the head of Matono with AAPA. The rejection is AAPA “in view of” Matono. Matono has only been used to show motivation for reducing the thickness of a pole of an upper magnetic layer of a magnetic write head.

The applicant lastly maintains "Addition of Matono's layer would not result in the claimed T-shape." This argument, however, is not found to be persuasive because of the following. Firstly, Matono is not utilized in the rejection, supra, for the claimed T-shape. AAPA teaches the claimed T-shape as detailed, supra.. Secondly, there is no "Addition of Matono's layer" to the existing structure of AAPA in the rejection, supra. The existing upper magnetic layer of AAPA is modified in view of the teachings/suggestions of Matono. Matono has only been used to show motivation for reducing the thickness of a pole of an upper magnetic layer of a magnetic write head.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. L. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Craig A. Renner
Primary Examiner
Art Unit 2652

CAR